REMARKS

Claims 1, 17, and 19 have been amended to address the Examiner's 35 U.S.C. § 112 concerns. Claims 1, 5, 6, 7, 8, 9, 11, 12, 13, 15, 16, 17, 19, 20, and 21 have additionally been amended to address one or both of two issues discussed with the Examiner during a telephone interview of November 16, 2006: First, the phrase "adapted to" has been changed to language with the Examiner has agreed addresses the concerns he raised in Paragraph 5 of the last Office Action with respect to MPEP 2114. Second, "means" language has been removed from these claims in a way the Examiner has agreed will avoid 35 U.S.C. § 112 clause 6 limitations. No new matter has been introduced. Support for the amended claims is found throughout the specification, claims, and drawings as originally filed. Twenty-three (23) claims are pending and remain for consideration. Reconsideration of the pending claims and further examination of the application is respectfully requested.

TELEPHONE INTERVIEW SUMMARY

The courtesy of the Examiner in conferring with Applicants' attorney, Allen Inks, on November 16, 2006, is gratefully acknowledged. During the telephone conference, an amendment to Claim 1 was discussed, responsive to the Examiner's 35 U.S.C. §112 rejection. Agreement was reached that the proposed amendment (changing "target objects" to "target vehicles" in the third element of Claim 1) would overcome the rejection. Claim 1 has been so amended.

Also during the telephone conference, paragraph 5 of the last Office Action (dealing with MPEP 2114) was discussed; the Examiner indicated that changing the phrase "adapted to" to the more definitive "configured to" would adequately address his concerns. The language of the affected claims has been so amended.

Also during the telephone conference, changing the language of the claims to avoid the limitations of 35 U.S.C. § 112 clause 6 with respect to "means for" language

was discussed. The Examiner agreed that changing "means" language to language such as "apparatus", "arrangement", or "component" would be acceptable. The language of the affected claims has been so amended.

IN THE CLAIMS

35 U.S.C. § 112

With respect to the Examiner's rejections under 35 U.S.C. §112, Claim 1 has been amended to recite that the target vehicle detection apparatus is configured "to identify the position of any target vehicles...", so as to be consistently referring to target vehicles. Dependent Claims 17 and 19 have been amended to be in accord with this amendment. Therefore, the Examiner's rejection on the basis of indefiniteness is overcome.

35 U.S.C. § 102

Claims 1-23 are rejected under 35 U.S.C. § 102, as anticipated by U.S. Patent No. EP 0890470, to Sawamoto. This rejection is respectfully traversed.

Applicants have considered the Examiner's "response to arguments" and would like to make the following comments on why Applicants believe the Examiner's reasoning is incorrect.

Applicants maintain their earlier line of argument as submitted in response to the previous Examination Report, in that the prior art Sawamoto (EP 0 890 470) does not disclose a first data processing apparatus configured to predict a target lane in which the host vehicle will be located when it has traveled along the projected path by the distance to the target object.

Applicants acknowledge that column 7, lines 32 to 35 recites that the device of Sawamoto calculates a future path for its own vehicle. Sawamoto also determines the distance from the host vehicle to a target vehicle using a radar unit

(column 6, lines 15 to 21). Sawamoto also determines whether its vehicle is making a lane change using a lane change detector (column 6, lines 5 to 9).

In Sawamoto, the lane change detector detects whether a lane change is currently occurring. The description of the function of the lane change detector appears between column 6, line 29 to column 7, line 12. This section cites a number of alternatives for the detection of lane changes. Each of these has in common the fact that they detect whether a lane change is currently occurring. The first option is a measurement of the rate of yaw (column 6, lines 37 to 51). Sawamoto discloses: "when the yaw rate sensor...generates a detected signal in excess of the threshold level, the CPU 55 determines that its own vehicle is making a lane change, and issues a lane change signal to the processor 6." (emphasis added). Note the use of the word "is" in the present tense. The same section also applies to the steering angle; if it is over a threshold, then the CPU 55 determines the vehicle is making a lane change.

The next option calculates a history of movement of the host vehicle. Sawamoto says: "if a lateral displacement corresponding to a lane change occurs in the calculating history of movement, then the CPU 55 determines that its own vehicle is making a lane change, and issues a lane change signal to the processor 6" (column 6, lines 54 to 58). Again, this is to determine whether a lane change is currently occurring. Similarly, where positional information from the navigation system 55 is used (column 7, lines 1 to 3) the CPU 55 can determine that the host vehicle is making a lane change. The CPU 55 can also determine that its own vehicle is making a lane change based on the operation of a direction of the host vehicle (column 7, lines 4 to 6). Column 7, lines 9 to 12, states that the CPU 55 determines that the host vehicle is making a lane change from the identified white marking line, the yaw aid or the steering wheel of the host vehicle. All of these features have in common the fact they work out whether the vehicle is currently making a lane change.

Accordingly, the CPU 55 in Sawamoto is not carrying out a prediction. It is required in claim 1 that the first data processing apparatus predict the target lane. "Predict" is defined in the Oxford English dictionary (relevant page submitted in the accompanying Information Disclosure Statement) as "to say beforehand, foretell...". Accordingly, to predict something is to say beforehand what that something will be in the future. In Applicants' amended claims, the prediction is qualified by the term "when it has traveled along the projected path by the distance to the target object". This is requiring that the prediction be of the location of the host vehicle when it has traveled along the projected path by the relevant distance. It is not that the prediction is carried out when the host vehicle has traveled along the projected path but that the prediction is of the location of the host vehicle once it has traveled along the projected path. The Examiner's interpretation of the "when" clause is clearly not what is envisaged by the claim when interpreted in light of the specification (see MPEP §2111.01). The claims therefore require that the prediction is carried out at a first instance to determine where the host vehicle will be when it has traveled the appropriate distance. This is quite clearly not carried out in Sawamoto.

In Sawamoto, the processor 6 determines whether a lane change is being carried out based on the signal from the lane change detector 5 discussed above (column 7, lines 13, 16, 17 and 19 to 25). If the lane change is happening, then the processor 6 moves the estimated path for its own vehicle in an appropriate direction one lane width (column 7, lines 26 to 28, column 8, lines 40 to 44). The processor therefore assumes that the host vehicle will travel in this new lane until another lane change is detected. There is no prediction of the target lane at the distance to the target vehicle.

The Examiner cites column 9, lines 16 to 41 of Sawamoto as showing that Sawamoto discloses a processor for predicting a target lane based on the distance to the vehicle. Respectfully, however, this is incorrect. The following analysis of the

cited section of Sawamoto demonstrates that this section does not disclose what the Examiner claims it does. Column 9, lines 16 to 28, describes Figures 6A and 6B. A host vehicle Z is shown, traveling along a predicted path K1. Note that K1 is not a distance; column 9, lines 25 to 26, states that K1 is an estimated path for the vehicle Z in the present lane. Therefore, it is clear that K1 is not a distance to the target vehicle. The path K1 is inherently in the direction of the proceeding vehicle P because the proceeding vehicle P is ahead of the host vehicle Z in the same lane. Note how there is no disclosure of the distance to the target vehicle P in this section with respect to the definition of path K1 (Column 9, lines 29 to 32); K1 is independent of this distance.

Column 9, lines 33 to 41, discusses what happens when it is determined that a lane change is currently occurring. The estimated path K1 is moved by the lane width W one lane to the right. As column 9, lines 36 to 38 states, this results in tentative path K2 in the new lane. Thus, the path K2 will always be in the lane to the right or left of the vehicle once a lane change currently in occurrence is detected. There can be no prediction of a target lane at some future point, given that the path K2 will always be one lane to the right or to the left of the host vehicle; the tentative path is generated such that it is always one lane to the left or the right. This tentative path is generated as of the change of lane. It is not a prediction of lane changes that will happen in anything other than the immediate future whilst the current lane change is occurring.

It is also to be noted that it is only after the tentative path is generated that it is determined whether a vehicle Q is in the new path (column 9, lines 38 to 41). There is no detection of the distance of the new front vehicle Q in the determination of the tentative path K2. The two predictive paths K1 and K2 are therefore independent of the distance to the target vehicles P and Q. There is nothing in the section cited by the Examiner to state that the prediction is of the target lane in which the host vehicle will be once it has traveled the distance to the

target vehicle, instead, the system assumes that the vehicle is either traveling in the same lane or is imminently moving when one lane to the left or to the right. There is no prediction of a target lane of anything other than the currently-occurring maneuver.

The Examiner asserts that Applicants argue that Sawamoto does not predict which lane the host vehicle will be in. Sawamoto determines whether the host vehicle is changing lanes based on the lane change detector discussed above. As Applicants have discussed, this determines the host vehicle is currently changing lanes. It does **not**, however, extend this prediction to the lane in which the host vehicle will be in at the required distance. Sawamoto does determine a future path for the vehicle. However, there is no comparison of this to a target lane.

The Examiner cites column 7, lines 29 to 54 as showing a prediction of a target lane for a host vehicle. Column 7, lines 29 to 37 discloses that the processor plots a future path for its own vehicle estimated from vehicle speed and steering angle or yaw rate of the host vehicle. This is therefore a future path for the vehicle. There is no disclosure of comparing this to a target lane. Column 7, lines 38 to 46, adds to this a history of movement of the host vehicle. This adds nothing to the calculation of the future path of the vehicle and again there is no comparison of the future paths to a target lane. Finally, column 7, lines 47 to 54 discusses the detection of a preceding vehicle on the estimated path. There is no disclosure in this section of any comparison of the future path to a target lane.

Accordingly, Applicants' assertion that Sawamoto does not predict which lane the host vehicle will be in at the required distance still holds valid and the section cited by the Examiner does not disclose any detection of what lane the vehicle will be in after the vehicle has traveled that distance. Furthermore, Applicants' remarks are no way in contradiction. Sawamoto, as discussed above, determines whether a lane change is currently occurring based on the output of a

steering rate sensor. This is therefore a consideration of what is currently occurring. Applicants use a yaw sensor in their invention for the prediction of the future path of the vehicle. There is therefore no contradiction in arguments that Sawamoto uses the yaw sensor to determine whether a lane change is currently occurring and the use of a yaw sensor in the present application to determine what lane the vehicle will be in at a defined future point.

Accordingly, the Examiner has not shown that Applicants' argument that Sawamoto does not disclose the first data processing apparatus configured to predict a target lane in which the host vehicle will be located when it has traveled along the projected path by the distance to the target object is incorrect and in fact Applicants' arguments still hold good. Sawamoto does not disclose the first data processing apparatus as claimed and so cannot be used to show that the claims lack novelty under 35 U.S.C. §102.

Applicants submit that all the claims are novel and inventive and so are allowable. In view of the foregoing remarks, it is believed that the Application is in condition for Allowance. Accordingly, an early Notice thereof is respectfully requested. However, if the Examiner feels that he is unable to issue a Notice of Allowance for any reason, Applicants request that the Examiner contact Applicants' attorney at 419.255.5900 (office) or 419.260.4657 (mobile) to discuss the application further.

Respectfully submitted,

Thedford I. Hitaffer
Reg. No. 38,490

MacMillan, Sobanski & Todd, LLC
One Maritime Plaza, Fourth Floor
720 Water Street
Toledo, Ohio 43604
(419) 255-5900